

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

| | | | |
|---|--|------------------|--|
| (51) International Patent Classification: H04M 11/04, H04M 11/00 | | A1 | (11) International Publication Number: WO 00/45582 |
| | | | (43) International Publication Date: 03 August 2000 (03.08.2000) |
| (21) International Application Number: PCT/SE00/00178 | | Published | |
| (22) International Filing Date: 28 January 2000 (28.01.2000) | | | |
| (30) Priority Data: 9900335-2 01 February 1999 (01.02.1999) SE | | | |
| (60) Parent Application or Grant SATSAFE MLS AB [/]: (). DE BONNENFANT, Björn [/]; (). DE BONNENFANT, Björn [/]; (). EURNER & DELMAR PATENTBYRÅ AB: (). | | | |
| (54) Title: SECURITY SYSTEM FOR ADMITTING A USER HAVING A CELLULAR PHONE TO VISIT A SECURITY AREA (54) Titre: SYSTEME DE SECURITE PERMETTANT A UN UTILISATEUR MUNI D'UN TELEPHONE CELLULAIRE DE VISITER UNE ZONE DE SECURITE | | | |
| (57) Abstract <p>The present invention provides a security system for admitting a user (101), having a standard cellular telephone (104), into, or allowing a user to visit, a security area. Said security system being flexible, supporting multiple users each having a unique standard cellular telephone and possibly multiple locks individually responsive to each standard cellular telephone.</p> | | | |
| (57) Abrégé <p>L'invention concerne un système de sécurité destiné à permettre à un utilisateur (101) muni d'un téléphone cellulaire standard (104) de pénétrer dans une zone de sécurité ou de la visiter. Ce système de sécurité est souple, supporte des utilisateurs multiples dont chacun possède un téléphone cellulaire standard unique et éventuellement plusieurs serrures répondant de façon individuelle à chaque téléphone cellulaire standard.</p> | | | |

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

| | | | |
|--|--|--|---|
| (51) International Patent Classification ⁷ : H04M 11/04, 11/00 | | A1 | (11) International Publication Number: WO 00/45582 |
| | | | (43) International Publication Date: 3 August 2000 (03.08.00) |
| (21) International Application Number: PCT/SE00/00178 | | (81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (Utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). | |
| (22) International Filing Date: 28 January 2000 (28.01.00) | | | |
| (30) Priority Data: 9900335-2 1 February 1999 (01.02.99) SE | | | |
| (71) Applicant (for all designated States except US): SATSAFE MLS AB [SE/SE]; Box 27165, S-102 52 Stockholm (SE). | | | |
| (72) Inventor; and (75) Inventor/Applicant (for US only): DE BONNENFANT, Björn [SE/SE]; Sjölagårdsgatan 8A, S-111 31 Stockholm (SE). | | | |
| (74) Agent: EHRNER & DELMAR PATENTBYRÅ AB; Box 103 16, Gumshornsgatan 7, S-100 55 Stockholm (SE). | | | |
| | | Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. | |
| (54) Title: SECURITY SYSTEM FOR ADMITTING A USER HAVING A CELLULAR PHONE TO VISIT A SECURITY AREA | | | |
| (57) Abstract | | | |
| <p>The present invention provides a security system for admitting a user (101), having a standard cellular telephone (104), into, or allowing a user to visit, a security area. Said security system being flexible, supporting multiple users each having a unique standard cellular telephone and possibly multiple locks individually responsive to each standard cellular telephone.</p> | | | |
| | | | |

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

| | | | | | | | |
|----|--------------------------|----|--|----|--|----|--------------------------|
| AL | Albania | ES | Spain | LS | Lesotho | SI | Slovenia |
| AM | Armenia | FI | Finland | LT | Lithuania | SK | Slovakia |
| AT | Austria | FR | France | LU | Luxembourg | SN | Senegal |
| AU | Australia | GA | Gabon | LV | Latvia | SZ | Swaziland |
| AZ | Azerbaijan | GB | United Kingdom | MC | Monaco | TD | Chad |
| BA | Bosnia and Herzegovina | GE | Georgia | MD | Republic of Moldova | TG | Togo |
| BB | Barbados | GH | Ghana | MG | Madagascar | TJ | Tajikistan |
| BE | Belgium | GN | Guinea | MK | The former Yugoslav Republic of Macedonia | TM | Turkmenistan |
| BF | Burkina Faso | GR | Greece | | | TR | Turkey |
| BG | Bulgaria | HU | Hungary | ML | Mali | TT | Trinidad and Tobago |
| BJ | Benin | IE | Ireland | MN | Mongolia | UA | Ukraine |
| BK | Brazil | IL | Israel | MR | Mauritania | UG | Uganda |
| BY | Belarus | IS | Iceland | MW | Malawi | US | United States of America |
| CA | Canada | IT | Italy | MX | Mexico | UZ | Uzbekistan |
| CF | Central African Republic | JP | Japan | NE | Niger | VN | Viet Nam |
| CG | Congo | KE | Kenya | NL | Netherlands | YU | Yugoslavia |
| CH | Switzerland | KG | Kyrgyzstan | NO | Norway | ZW | Zimbabwe |
| CI | Côte d'Ivoire | KP | Democratic People's Republic of Korea | NZ | New Zealand | | |
| CM | Cameroon | | | PL | Poland | | |
| CN | China | KR | Republic of Korea | PT | Portugal | | |
| CU | Cuba | KZ | Kazakhstan | RO | Romania | | |
| CZ | Czech Republic | LC | Saint Lucia | RU | Russian Federation | | |
| DE | Germany | LJ | Liechtenstein | SD | Sudan | | |
| DK | Denmark | LK | Sri Lanka | SE | Sweden | | |
| EE | Estonia | LR | Liberia | SG | Singapore | | |

Description

5

10

15

20

25

30

35

40

45

50

55

5

SECURITY SYSTEM FOR ADMITTING A USER HAVING A CELLULAR PHONE TO VISIT A SECURITY AREA

10

TECHNICAL FIELD OF INVENTION

15

The present invention relates in generally to a security system for admitting a user to visit a security area, and more specifically, to a security system for admitting a user using a standard cellular phone.

20

DESCRIPTION OF RELATED ART

10

25

30

35

In cellular telecommunication systems cellular telephones are equipped with a hardware code uniquely identifying each phone to the system. Such a code is for instance called IMEI code in the GSM system. If a owner to a cellular phone for some reason loses his phone, for instance due to theft, he may prohibit the thief or someone else from using his phone by reporting it as stolen to the telecommunication operator. Not only will his specific telephone account be closed but his specific telephone will also be useless, since the unique IMEI code is placed on a blacklist and the telephone system will refuse to connect calls using hardware which is present at the blacklist.

40

45

50

20 Thus, has each cellular telephone a unique number which uniquely identifies the specific telephone.

Different sorts of electronic keys are known, such as for instance radio keys used to open garage doors. Such radio keys may comprise a identification code, which is sent when a user press a button, and which is identified by a receiver opening the garage door. Such radio keys are somewhat expensive to produce and are not very flexible in their application. For instance can it be cumbersome to handle several different doors and several different users.

55

5
10
15
20
25
30
35
40
45
50
55

It would therefore be beneficial if a more flexible security system could be achieved for admitting a user to a security area where several different persons have, or do not have, access to different security areas through several different locked doors.

SUMMARY OF INVENTION

The object of the present invention is thus to provide a security system for admitting a user, having a standard cellular telephone, into, or allowing a user to visit, a security area. Said security system being flexible, supporting multiple users each having a unique cellular telephone and possibly multiple locks individually responsive to each cellular telephone.

The objects of the present invention, described above, are obtained by providing a system according to claim 1.

An advantage of the present invention is that a flexible security system is achieved which uses standard cellular telephones as electronic radio keys.

Another advantage is that the security system may control a door for admitting a user to enter a specific area, or may with regular intervals check if a user is present in a specific area.

Another advantage with the present invention is that a security system with high flexibility and good security is achieved with very low-cost means.

Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the

5
10
15
20
25
30
35
40
45
50
55

detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the scope of the invention will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration only, and thus are not limitative of the present invention and wherein

Figure 1 shows a diagrammatic view of a preferred embodiment according to the present invention;

Figure 2 shows a schematic block diagram of a preferred embodiment according to the present invention;

Figure 3 shows a schematic block diagram of another preferred embodiment according to the present invention;

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In figure 1 a user 101 is approaching a door 102 leading to a security area. It shall be understood that the term security area is used, in the present text, in a very broad sense. It may thus not necessarily indicate an area with extremely high security requirements, though such areas are of course included, but may also include any area behind a locked door, such any ordinary housing.

Said user 101 has a standard cellular telephone 104, in this preferred embodiment a GSM telephone, though any standard cellular telephone comprising a unique hardware code may be

5

10

15

20

25

30

35

40

45

50

55

used, which, upon request, or on a regular basis, sends a IMEI message. This IMEI message is received by a security apparatus 103 being connected to the locking function of said door 102. The security apparatus 103 may be designed, or tuned, to only receive signals which are sent within a specified area from said security apparatus 103, so that distant cellular telephones, sending IMEI messages, do not affect the locking function of the door 102. The function of said security apparatus 103 are more detailed in figure 2.

Figure 2 shows a schematic block diagram of the security apparatus shows in figure 1. The standard cellular telephone 104 sends a IMEI message which is received by a broadband receiver 201 comprising an antenna 202. The broadband receiver is broadband in terms of receiving the complete GSM band. In another preferred embodiment the broadband receiver may be designed to receive a much wider band, or several separated bands, such as both the GSM and the PCN band. The messages received by the broadband receiver is forwarded to a GSM message decoder 203. The GSM message decoder is designed only for recognising a GSM IMEI message and may therefore be a relatively low-cost implementation. Connected to the GSM message decoder 203 is an I/O (input/output) device 204 for storing, retrieving and deleting records in a register 205 located in the GSM message decoder. The I/O device 204 is used to store IMEI codes in the register 205. When a IMEI message is received and decoded it is compared with the stored IMEI codes, and if a match occur, that is if the decoded IMEI is present in the stored set of IMEIs, the GSM decoder signals to a validating device 206 which unlocks the door 102 admitting the user 101 access to the security area behind the door 102.

5

10

In another preferred embodiment the storing of IMEI codes may be performed through the radio interface, comprising the broadband receiver 201. In this case the GSM message decoder is also arranged to receive digits, as well as instructions for storing a sequence of digits in said register 205.

15

20

Figure 3 shows another preferred embodiment according to the invention, where the security apparatus comprises a transmitting device 301 coupled to the antenna 202 and the GSM message decoder 203. With this arrangement the security apparatus may send a message to cellular phones within reach requesting transmission of the IMEI code.

25

30

The security apparatus may also fetch other data from the cellular phone such as the telephone number of a telephone subscription installed in said phone, a digit sequence entered on the cellular phone by said user, or other types of information which may be combined with the IMEI for increased security.

35

40

According to yet another preferred embodiment the security apparatus may be mounted in a corridor or in a room for surveillance purposes. It may then transmit an alarm signal to a security service or may sound an alarm if a non-authorized person is visiting the room or corridor.

45

50

55

Claims

5

10

15

20

25

30

35

40

45

50

55

5

CLAIMS

10

1. Security system, comprising a security apparatus (103), for admitting a user (101), having a cellular phone (104), to visit a security area,

- 5 - said phone being arranged for transmitting a first
15 standardised identity code, unique for said particular
 phone, according to a first standardised cellular
 system specification,

characterised in said security apparatus comprising,

20

- 10 - a broadband receiver arranged for receiving signals in
 at least said first cellular system,
 - a cellular system signal decoder arranged for decoding
25 said signal and storing said transmitted identity code,
 - a register arranged for storing at least a first set of
15 identity codes,
 - validating means arranged for admitting said user
30 dependent on if said decoded identity code is in said
 first set of identity codes.

2. Security system according to claim 1, wherein

35

- 20 - said security apparatus further comprises a
 input/output means for storing identity codes in said
 register.

3. Security system according to claim 1 or 2, wherein

40

- said validating means issue an alarm if said decoded
25 identity code is not in said first set of identity
 codes.

45

4. Security system according to claim 1 or 2, wherein

- said validating means opens a lock if said decoded
 identity code is in said first set of identity codes.

50

30 5. Security system according to any of claims 1-4, wherein

55

5

10

5

15

20

25

15

30

35

20

40

45

50

55

- said broadband receiver is arranged for receiving a second set of digits from said cellular phone,
 - said register is arranged for storing each post in said first set of identity codes together with a second set of digits,
 - said validating means is arranged for validating said user dependent on if said decoded identity code is in said first set and if said received second set of digits corresponds to said second set of digits stored in said register together with said identity code.
6. Security system according to any of claims 1-5, wherein
- said security system performs said validation with regular time intervals.
7. Security system according to any of claims 1-6, wherein
- said security apparatus comprises a transmitter arranged for sending a request for said identity code to said cellular phone .
8. Security system according to any of claims 1-7, wherein
- said identity code is an IMEI code.
9. Security system according to any of claims 1-8, wherein
- said standardized cellular system is selected from a group of systems including GSM, PCN, DECT, AMPS, D-AMPS.
10. Security apparatus for validating a user as specified in any of claims 1-9.
11. Use of a cellular phone for validating a user, wherein
- said cellular phone is used as specified in any of claims 1-9.

1/2

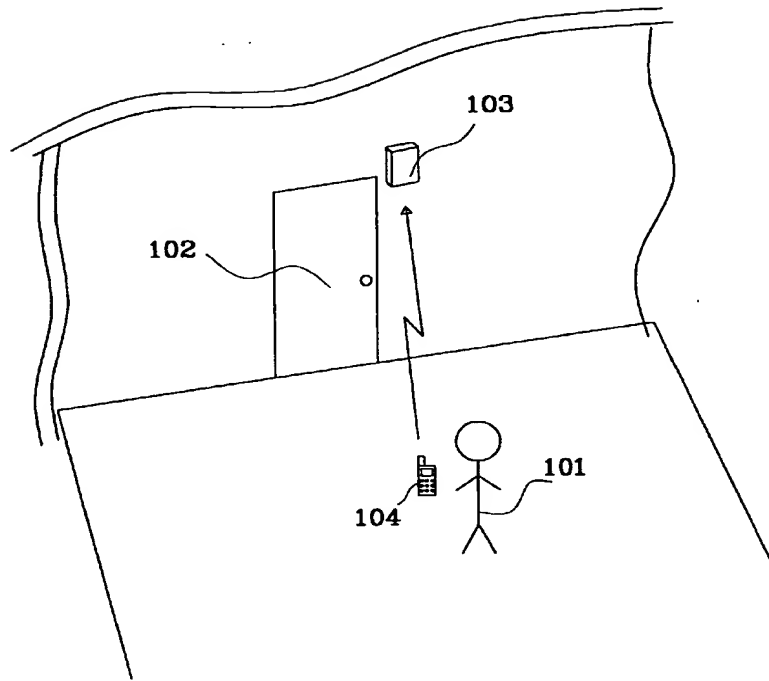


Fig. 1

2/2

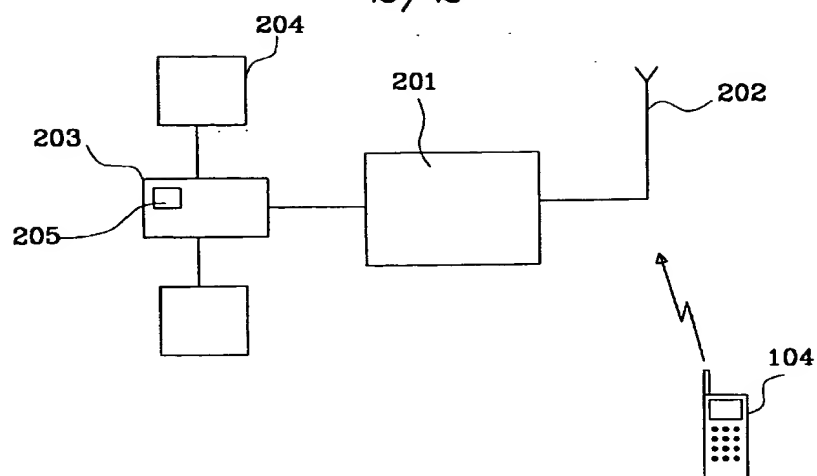


Fig. 2

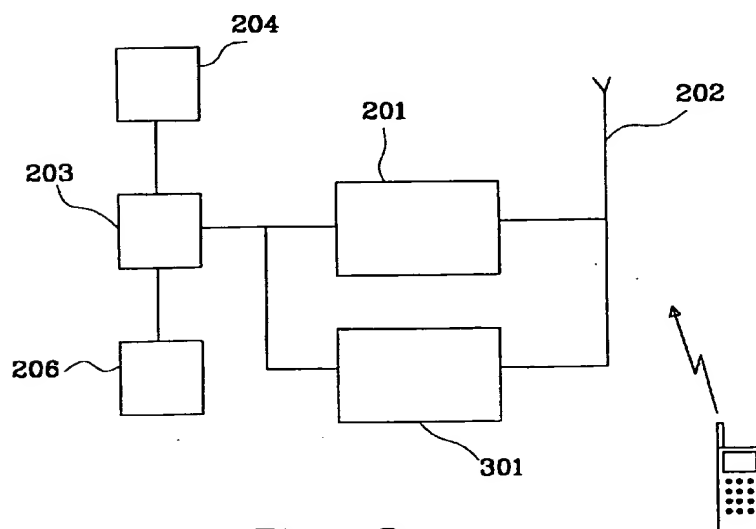


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/00178

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04M 11/04, H04M 11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| X | WO 9314571 A1 (SUPRA PRODUCTS, INC.), 22 July 1993 (22.07.93), page 4, line 1 - line 4; page 5, line 5 - line 8; page 13, line 8 - line 14 -- | 1-11 |
| X | GB 2230365 A (OLIVETTI RESEARCH LTD.), 17 October 1990 (17.10.90), page 12, line 21 - page 16, line 15, claims 14-20 -- | 1-11 |
| X | US 5541585 A (DUHAME ET AL.), 30 July 1996 (30.07.96), column 1, line 45 - column 2, line 28; column 4, line 20 - column 5, line 13 -- | 1-11 |

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document, but published on or after the international filing date

"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search

4 July 2000

Date of mailing of the international search report

10-07-2000

Name and mailing address of the ISA:

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

Facsimile No. +46 8 666 02 86

Authorized officer

Stefan Hermanson/ipn

Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/00178

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| A | WO 9816080 A2 (AT & T WIRELESS SERVICES, INC.), 16 April 1998 (16.04.98), page 5, line 3 - line 39; page 7, line 6 - page 8, line 2 -- | 1-11 |
| A | US 5646605 A (LEONAGGED ET AL.), 8 July 1997 (08.07.97), column 1, line 41 - column 2, line 63 -- | 1-11 |
| A | DE 29805758 U1 (STENTOFON ELECTRONIC GMBH), 2 July 1998 (02.07.98), page 1 - page 4, line 21 -- | 1-11 |
| A | WO 9207429 A1 (SMITH MYERS COMMUNICATIONS LIMITED), 30 April 1992 (30.04.92), page 4, line 25 - page 5, line 20 -- ----- | 1-11 |

INTERNATIONAL SEARCH REPORT
Information on patent family members

02/12/99

International application No.

PCT/SE 00/00178

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---------------------|---|--|
| WO 9314571 A1 | 22/07/93 | AT 155912 T AU 673983 B AU 691137 B AU 1229497 A AU 2589492 A BR 9207933 A DE 69221165 D,T EP 0639287 A,B SE 0639287 T3 ES 2106883 T HK 1001558 A JP 2894515 B JP 7502871 T US 5475375 A US 5654696 A US 5705991 A US 5815557 A | 15/08/97 05/12/96 07/05/98 13/03/97 03/08/93 05/12/95 27/11/97 22/02/95 16/11/97 00/00/00 24/05/99 23/03/95 12/12/95 05/08/97 06/01/98 25/09/98 |
| GB 2230365 A | 17/10/90 | GB 2260208 A,B US 5402469 A | 07/04/93 28/03/95 |
| US 5541585 A | 30/07/96 | NONE | |
| WO 9816080 A2 | 16/04/98 | US 5875395 A | 23/02/99 |
| US 5646605 A | 08/07/97 | WO 9601542 A | 18/01/96 |
| DE 29805758 U1 | 02/07/98 | NONE | |
| WO 9207429 A1 | 30/04/92 | AU 8716091 A EP 0553152 A GB 2250895 A,B US 5542120 A | 20/05/92 04/08/93 17/06/92 30/07/96 |